Space Weather Forecast

Issued on Monday, 04 July 2022 at 01:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated G1/Minor Storms associated with coronal hole arrival.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been mostly Very Low, but increased to Low following an isolated C-class flare at 03/1954UTC from a sunspot region now rotated beyond view at the west limb. There are currently three numbered sunspot regions on the visible disc. The most significant of these is located in the northeast quadrant. Some minor decay was observed in recent imagery in its small trailer spots, with the larger single lead spot unchanged.

No Earth-directed CMEs have been observed on available imagery.

Solar Wind / Geomagnetic Activity: The solar wind speed, has been at background levels, with mostly small variations. The number of particles in the solar wind was above average for much of the period. The strength of the solar winds magnetic field showed an increasing trend back to moderate levels from around 03/0600 UTC. The important north-south component was predominantly positive, varying between weak and moderate, but some recent short-lived weak negative periods were observed. The above parameters may indicate some weak CME influence. Geomagnetic activity was Quiet to Unsettled (Kp 2 to 3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low or Very Low, with a very slight chance of Moderate activity.

Solar Wind / Geomagnetic Activity: A possible slow CME from 29th may reach Earth on Day 2 (5th), however confidence is very low with no significant impacts currently anticipated. No other Earth directed CMEs are expected at present.

Solar winds are currently at background levels. The next main enhancement is likely to come from a northern coronal hole, which is a much larger and wider feature than on the previous rotation. There is some uncertainty on potential arrival time, but from later on Day (5th) is the current estimate. There is also a low chance of an enhancement at Earth prior to the anticipated coronal hole mentioned above, from a previous smaller coronal hole in the southwest quadrant, but this is only low confidence.

Geomagnetic activity is likely to be mainly Quiet, with occasional Unsettled intervals possible through Day 1 and much of Day 2 (4th and 5th). An increased chance of Unsettled to Active periods is then likely to develop from later on Day 2 (5th), with a chance of isolated G1/Minor

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Storms, due to high speed stream arrival from coronal hole 97.

Energetic Particles / Solar Radiation: In the absence of any significant sunspot development, the count rate of energetic particles (high energy protons) is forecast to persist at background levels, with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	20	30	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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